CLAIMS

What is claimed is:

1   1.   A method for controlling admittance of a data packet into a memory buffer,

2   the method comprising:

3   performing, prior to queuing the data packet for routing by a processor, the

4   following:

5   receiving a data packet from one of at least two different ports;

6   determining a priority value within the data packet; and

7   determining an admittance group identifier for the data packet based on

8   the priority value and the port the data packet was received; and

9   queuing the data packet from the memory buffer to one of a number of queues

10   for routing by the processor upon determining that a number of data packets stored in

11   the memory buffer and having the admittance group identifier is not greater than a

12   threshold value.

1   2.   The method of claim 1, further comprising discarding the data packet upon

2   determining that the number of data packets stored in the memory buffer and having

3   the admittance group identifier is greater than the threshold value.

1   3.   The method of claim 1, wherein determining the priority value within the data

2   packet is based on classifying the data packet as one of a number of packet formats.

1   4.   The method of claim 3, wherein classifying the data packet received from one

2   of the at least two different ports comprises classifying the data packet using

3   instructions in a number of instruction streams, wherein each of the number of

4   instruction streams are associated with one of the number of packet formats.

1   5.   The method of claim 4, wherein the number of packet formats are selected

2   from the group consisting of Internet Protocol and Ethernet.

1   6.   The method of claim 1, wherein determining the admittance group identifier

2   includes traversing a table of admittance group identifiers based on the priority value

3   and the port that the data packet was received from.

1   7.   The method of claim 6, further comprising selectively outputting the data

2   packets from the memory buffer through the number of queues based on the

3   admittance group identifier.

1   8.   A method comprising:

2   receiving data packets from at least two different ports;

3   for each of the data packets, performing, prior to queuing the data packet for

4   routing by a processor, the following:

5   classifying the data packet received from one of the at least two

6   different ports;

7   locating a priority value within the data packet based on the classifying

8   of the data packet;

9   determining an admittance group identifier for the data packet based on

10   the priority value and the port the data packet was received;

11   retrieving a threshold value for storing of data packets into the memory

12   buffer that have the admittance group identifier;

13   retrieving a stored value, the stored value representing a number of

14   data packets stored in the memory buffer that have the admittance group

15   identifier;

16   maintaining the data packet in the memory buffer upon determining

17   that the stored value has not exceeded the threshold value; and

18   discarding the data packet upon determining that the stored value has

19   exceeded the threshold value.

1   9.   The method of claim 8, further comprising assigning the data packet to a

2   queue of a number of queues to output the data packet from the memory buffer based

3   on the priority value and the port that the data packet was received from.

1   10.   The method of claim 9, further comprising selectively outputting the data

2   packets from the memory buffer through the number of queues based on the priority

3   value and the port that the data packets were received from.

1   11.   The method of claim 8, wherein classifying the data packet received from one

2   of the at least two different ports comprises classifying the data packet using

3   instructions in a number of instruction streams, wherein each of the number of

4   instruction streams are associated with one of a number of packet formats.

1   12.   The method of claim 11, wherein the number of packet formats are selected

2   from the group consisting of Internet Protocol and Ethernet.

1   13.   The method of claim 11, wherein classifying the data packet using instructions

2   in a number of instruction streams comprises:

3   selecting a byte of the data packet based on an offset value stored in the

4   instruction;

5   masking the selected byte of the data packet based on a mask value stored in

6   the instruction; and

7   comparing the masked selected byte of the data packet to a comparison value

8   stored in the instruction based on an operation code stored in the instruction.

1 14. The method of claim 13, further comprising:

2   changing a state of one of the number of instruction streams to failed upon

3 determining that the comparing for an instruction in the one of the number of

4 instruction streams failed; and

5   classifying the data packet using instructions in the number of instruction

6 streams that do not have a failed state.

1 15. An apparatus comprising:

2   preclassification circuitry coupled to receive a number of data packets from a

3 number of ports, wherein the preclassification circuitry is to determine a priority value

4 for each of the number of data packets;

5   control circuitry coupled to the preclassification circuitry; and

6   a memory buffer coupled to the control circuitry;

7   a number of queues coupled to a number of processors, wherein the control

8 circuitry is to queue a data packet of the number of data packets into the number of

9 queues from the memory buffer upon determining that a number of the data packets

10 stored in the memory buffer, which are received on the port that the that the data

11 packet is received and have a priority value that equals the priority value of the data

12 packet, has not exceeded a threshold value.

1 16. The apparatus of claim 15, wherein the control circuitry is to discard the data

2 packet upon determining that the number of data packets stored in the memory buffer,

3 which are received on the port that the data packet was received and have a same

4 priority value that was determined for the data packet, has exceeded the threshold

5 value.

1   17   The apparatus of claim 15, wherein the preclassification circuitry is to

2   determine the priority value based on classifications of the number of data packets as

3   one of a number of packet formats.

1   18.   The apparatus of claim 17, wherein the preclassification circuitry is to

2   determine the priority value based on classifications using instructions in a number of

3   instruction streams, wherein each of the number of instruction streams are associated

4   with one of the number of packet formats.

1   19.   The apparatus of claim 18, wherein the number of packet formats are selected

2   from the group consisting of Internet Protocol and Ethernet.

1   20.   The apparatus of claim 15, wherein the preclassification circuitry is to assign

2   each of the number of data packets to an admission group and a queue to output the

3   data packet from the memory buffer based on the priority value and the port that the

4   data packet is received from.

1   21.   The apparatus of claim 20, wherein the control circuitry is to selectively

2   output the number of data packets from the memory buffer through the number of

3   queues based on the priority value and the port that the number of data packets are

4   received from.

1   22.   An apparatus for controlling admittance of a data packet into a network

2   element, the apparatus comprising:

3   preclassification circuitry coupled to receive a number of data packets from

4   one of at least two different ports, wherein the preclassification circuitry is to

5   determine a priority value for each of the number of data packets;

6   admission control circuitry coupled to the preclassification circuitry, wherein

7   the admission control circuitry is coupled to receive the priority value and a port value

8   for the port of the one of at least two different ports that the number of data packets

9   are received from; and

10   a memory buffer coupled to the admission control circuitry, wherein the

11   admission control circuitry is to queue a data packet of the number of data packets

12   into one of a number of processing queues upon determining that a number of the data

13   packets stored in the memory buffer, which are received on the port that the that the

14   data packet is received and have a priority value that equals the priority value of the

15   data packet, has not exceeded a threshold value.

1   23.   The apparatus of claim 22, wherein the preclassification circuitry is to assign

2   each of the number of data packets to an admission group and a processing queue of

3   the number of processing queues to output the data packet from the memory buffer

4   based on the priority value and the port that the data packet is received from.

1   24.   The apparatus of claim 23, wherein the memory control circuitry is to

2   selectively output the number of data packets from the memory buffer through the

3   number of processing queues based on the priority value and the port that the number

4   of data packets are received from.

1   25.   The apparatus of claim 22, wherein the preclassification circuitry is to

2   determine the priority value based on classifications using instructions in a number of

3   instruction streams, wherein each of the number of instruction streams are associated

4   with one of the number of packet formats.

1   26.   The apparatus of claim 25, wherein the number of packet formats are selected

2   from the group consisting of Internet Protocol and Ethernet.

1 27. A machine-readable medium that provides instructions for controlling

2 admittance of a data packet into a memory buffer, which when executed by a

3 machine, causes the machine to perform operations comprising:

4 performing, prior to queuing the data packet for routing by a processor, the

5 following:

6 receiving a data packet from one of at least two different ports;

7 determining a priority value within the data packet; and

8 determining an admittance group identifier for the data packet based on

9 the priority value and the port the data packet was received; and

10 queuing the data packet from the memory buffer to one of a number of queues

11 for routing by the processor upon determining that a number of data packets stored in

12 the memory buffer and having the admittance group identifier is not greater than a

13 threshold value.

1 28. The machine-readable medium of claim 27, further comprising discarding the

2 data packet upon determining that the number of data packets stored in the memory

3 buffer and having the admittance group identifier is greater than the threshold value.

1 29. The machine-readable medium of claim 27, wherein determining the priority

2 value within the data packet is based on classifying the data packet as one of a number

3 of packet formats.

1 30. The machine-readable medium of claim 29, wherein classifying the data

2 packet received from one of the at least two different ports comprises classifying the

3 data packet using instructions in a number of instruction streams, wherein each of the

4 number of instruction streams are associated with one of the number of packet

5 formats.

1   31.   The machine-readable medium of claim 30, wherein the number of packet

2   formats are selected from the group consisting of Internet Protocol and Ethernet.

1   32.   The machine-readable medium of claim 27, wherein determining the

2   admittance group identifier includes traversing a table of admittance group identifiers

3   based on the priority value and the port that the data packet was received from.

1   33.   The machine-readable medium of claim 32, further comprising selectively

2   outputting the data packets from the memory buffer through the number of queues

3   based on the admittance group identifier.

1   34.   A machine-readable medium that provides instructions, which when executed

2   by a machine, causes the machine to perform operations comprising:

3   receiving data packets from at least two different ports;

4   for each of the data packets, performing, prior to queuing the data packet for

5   routing by a processor, the following:

6   classifying the data packet received from one of the at least two

7   different ports;

8   locating a priority value within the data packet based on the classifying

9   of the data packet;

10   determining an admittance group identifier for the data packet based on

11   the priority value and the port the data packet was received;

12   retrieving a threshold value for storing of data packets into the memory

13   buffer that have the admittance group identifier;

14   retrieving a stored value, the stored value representing a number of

15   data packets stored in the memory buffer that have the admittance group

16   identifier;

17   maintaining the data packet in the memory buffer upon determining

18   that the stored value has not exceeded the threshold value; and

19   discarding the data packet upon determining that the stored value has

20   exceeded the threshold value.

1 35. The machine-readable medium of claim 34, further comprising assigning the

2 data packet to a queue of a number of queues to output the data packet from the

3 memory buffer based on the priority value and the port that the data packet was

4 received from.

1 36. The machine-readable medium of claim 35, further comprising selectively

2 outputting the data packets from the memory buffer through the number of queues

3 based on the priority value and the port that the data packets were received from.

1 37. The machine-readable medium of claim 34, wherein classifying the data

2 packet received from one of the at least two different ports comprises classifying the

3 data packet using instructions in a number of instruction streams, wherein each of the

4 number of instruction streams are associated with one of a number of packet formats.

1 38. The method of claim 37, wherein the number of packet formats are selected

2 from the group consisting of Internet Protocol and Ethernet.

1 39. The method of claim 37, wherein classifying the data packet using instructions

2 in a number of instruction streams comprises:

3   selecting a byte of the data packet based on an offset value stored in the

4 instruction;

5   masking the selected byte of the data packet based on a mask value stored in

6 the instruction; and

7   comparing the masked selected byte of the data packet to a comparison value

8 stored in the instruction based on an operation code stored in the instruction.

1 40. The method of claim 39, further comprising:

2   changing a state of one of the number of instruction streams to failed upon

3 determining that the comparing for an instruction in the one of the number of

4 instruction streams failed; and

5   classifying the data packet using instructions in the number of instruction

6 streams that do not have a failed state.